


National Air Toxics Trends Sites

Interim Round-Robin Standard Study

(Very preliminary results)

With multiple labs conducting analysis of the NATTS samples, OAQPS identified the need for PT samples and NIST traceable standard reference materials to provide consistent, accurate, unbiased data.



But getting these things
together takes time

As an interim measure OAQPS asked the
Region 4 Science and Ecosystem Support
Division to prepare a series of standards for
analysis by the various NATTS labs.

The EPA Region 4 Science and Ecosystem Support Division prepared VOC standards and purchased trace metal filter standards.

VOC standards were prepared by:

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&

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Metals filters were analyzed at SESD
by:

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The Trace Metals filter media

- Certified Reference material purchased from High-Purity Standards designed to meet the requirements of Method 7300.
- Cellulose ester type filter spike with a component standard solution containing 16 elements.
- Blank filters were also purchased.

VOC Standards

- Spectra Gas nominal 100 ppbv standard
- Dilute the standard in humidified, high purity nitrogen
- Equipment used:
 - Entech Model 4600 Dynamic Diluter
 - Entech Model 7100 Preconcentrator
 - Entech Model 7016CA Autosampler
 - Agilent 6890 Gas Chromatograph
 - Agilent 5973N Mass Spectrometer

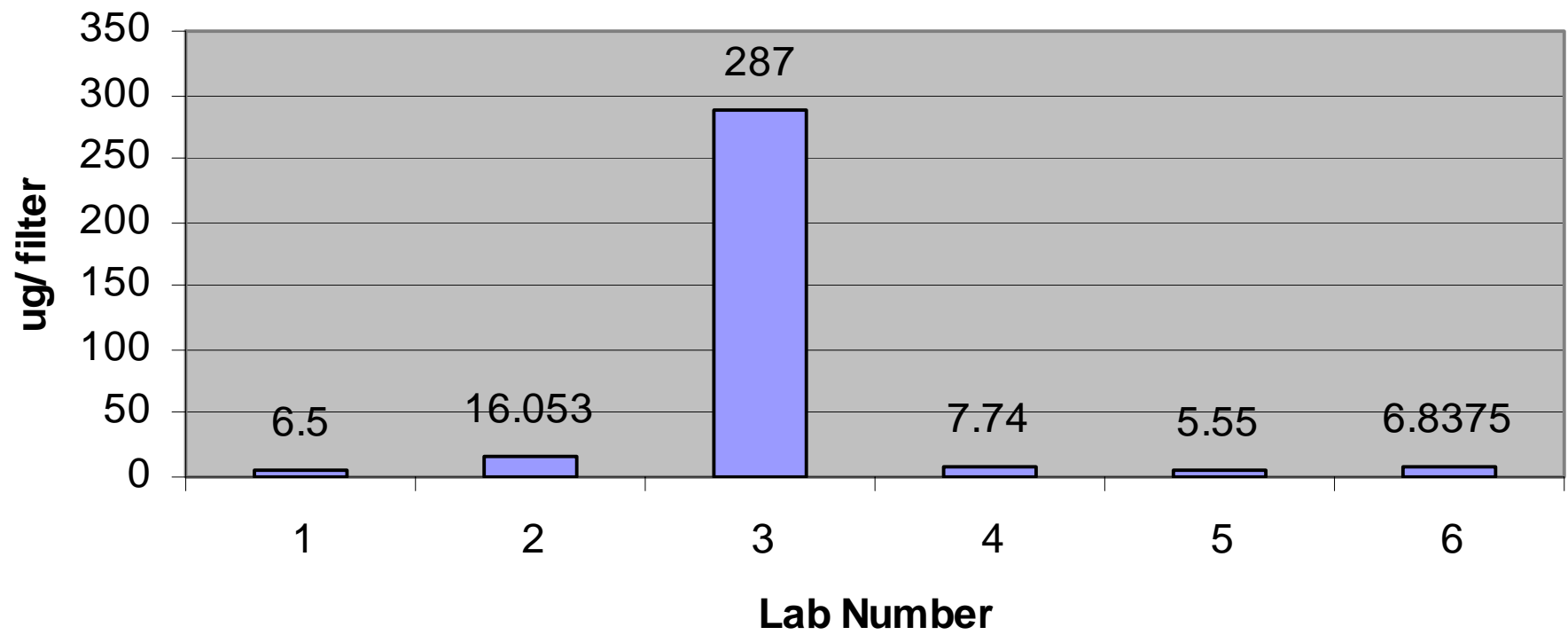




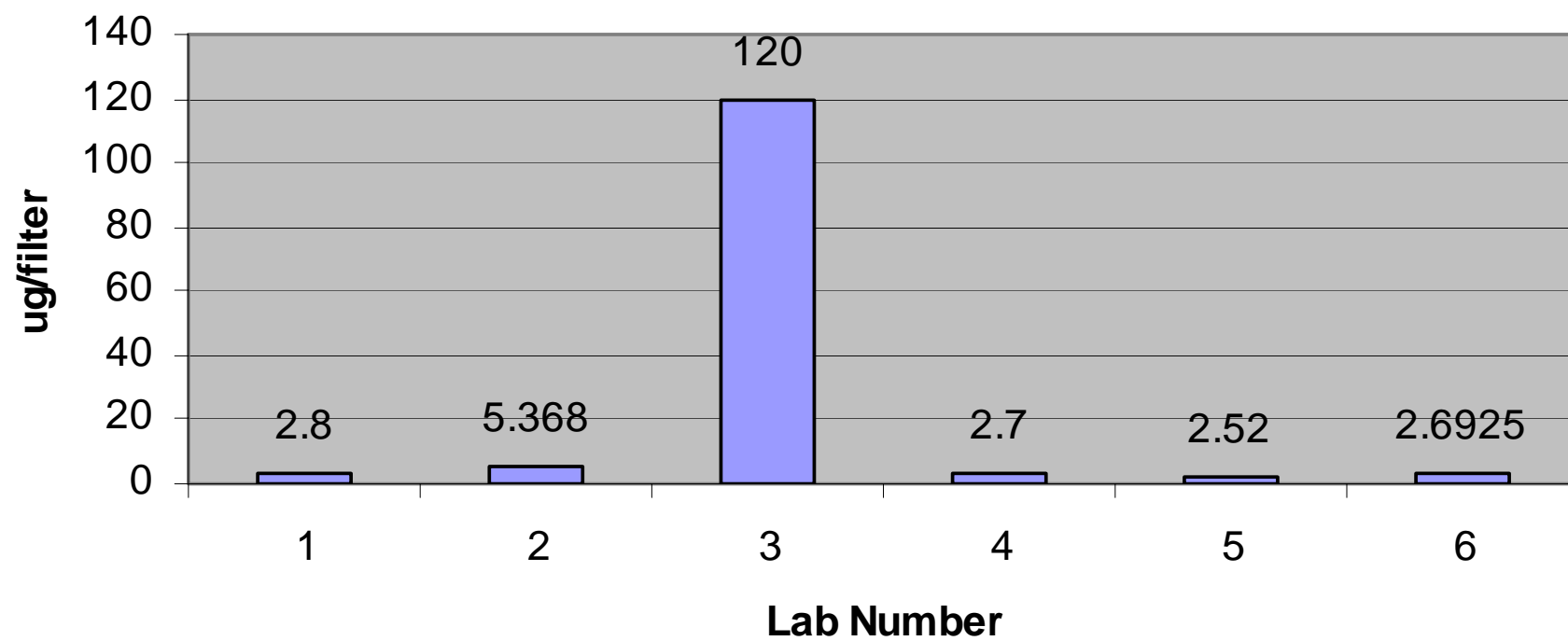
Metals Results

Lab #	1	2	3	4	5	6
	Proficiency	Proficiency	Proficiency	Proficiency	Proficiency	Proficiency
	Sample	Sample	Sample	Sample	Sample	Sample
Element	ug/filter	ug/filter	ug/filter	ug/filter	ug/filter	ug/filter
Arsenic	6.5	16.053	287	7.74	5.55	6.8375
Barium	2.4				2.63	
Beryllium	0.95	1.584	45	1.03	0.89	1.01
Cadmium	0.9	2.144	49	1.01	0.87	1.0275
Cobalt	2.4	5.942	120		2.39	
Copper	2.6				2.68	
Iron					3.72	
Manganes	1	2.659	46	1.01	1.16	0.98
Lead	2.6	4.896	124	2.44	2.42	2.7375
Antimony		<0.005				
Selenium	2.4	5.787	113			
Chromium	2.8	5.368	120	2.7	2.52	2.6925
Nickel	2.7	4.861	129	2.6	2.43	2.1925
Vanadium	2.6				2.42	
Zinc	3.4		266		12.49	

Arsenic



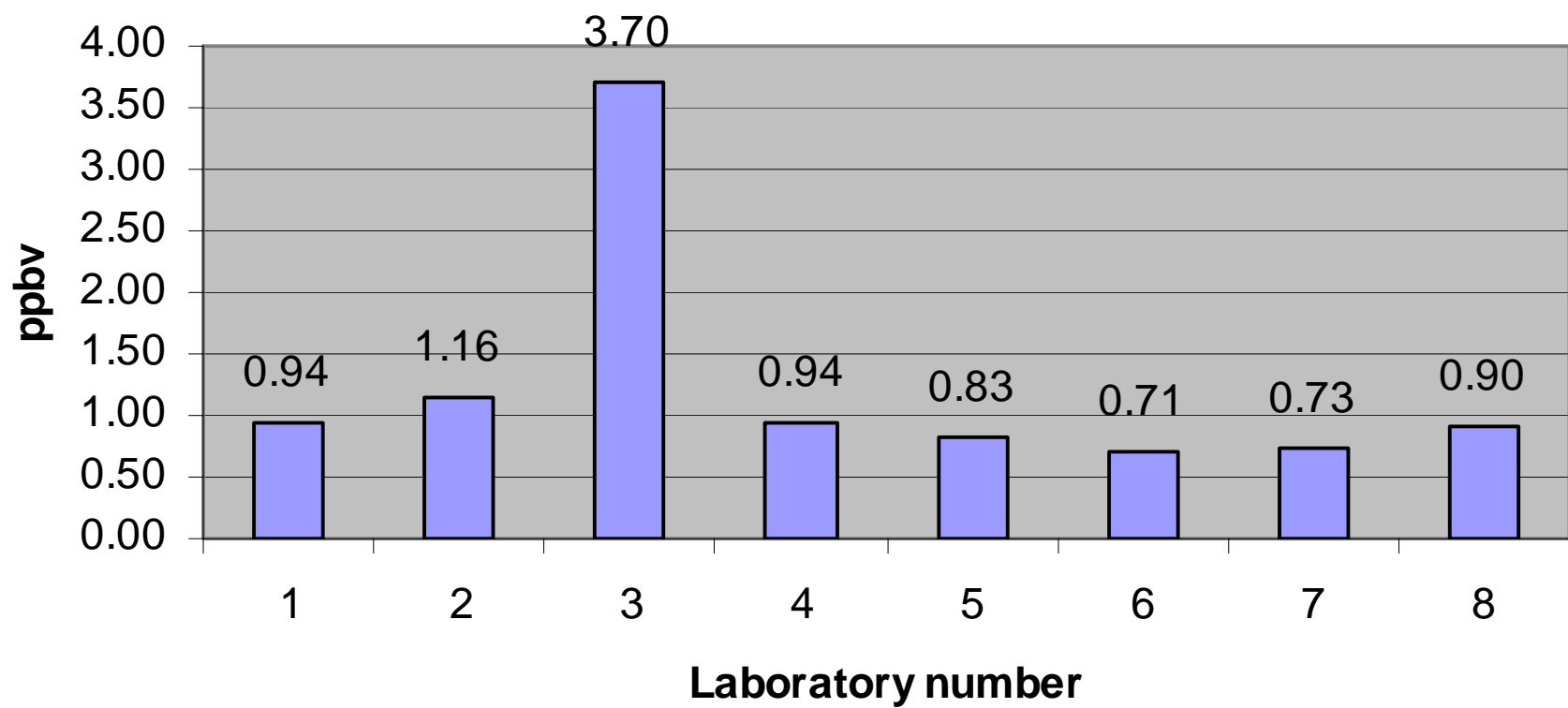
Chromium



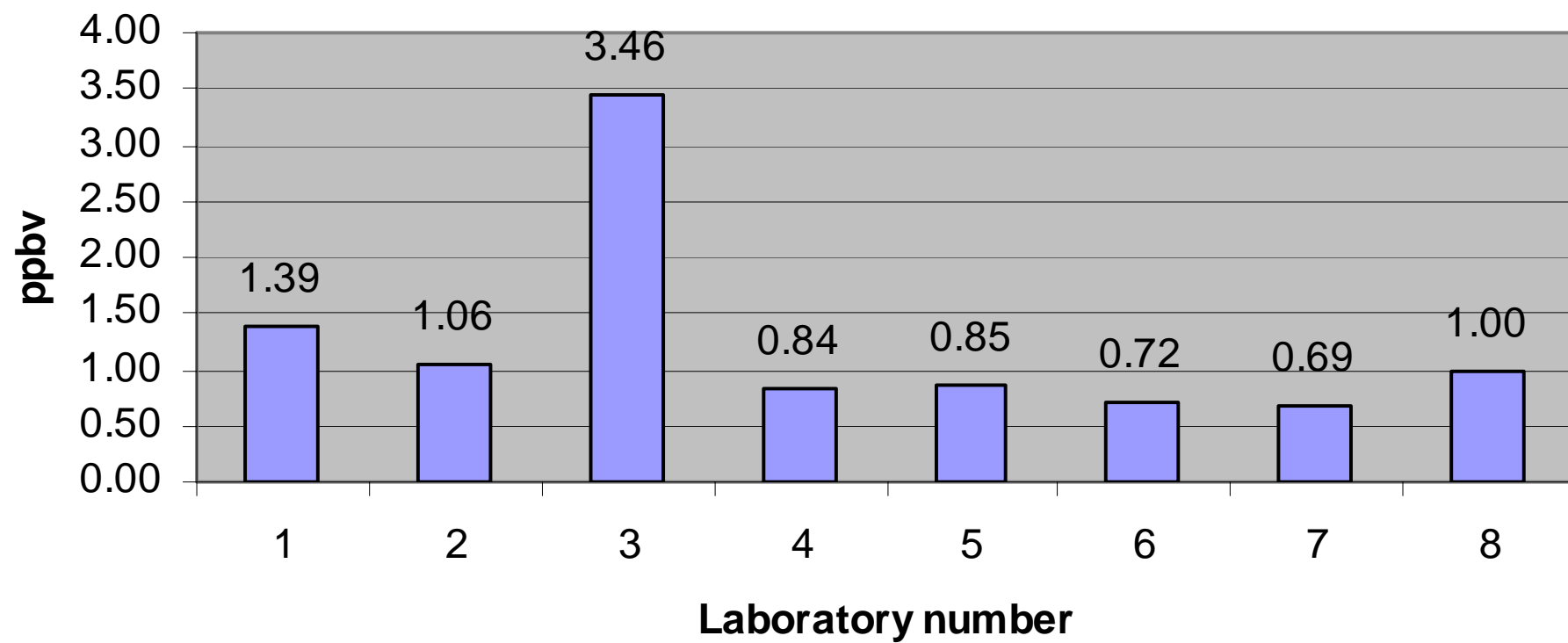


VOC Results

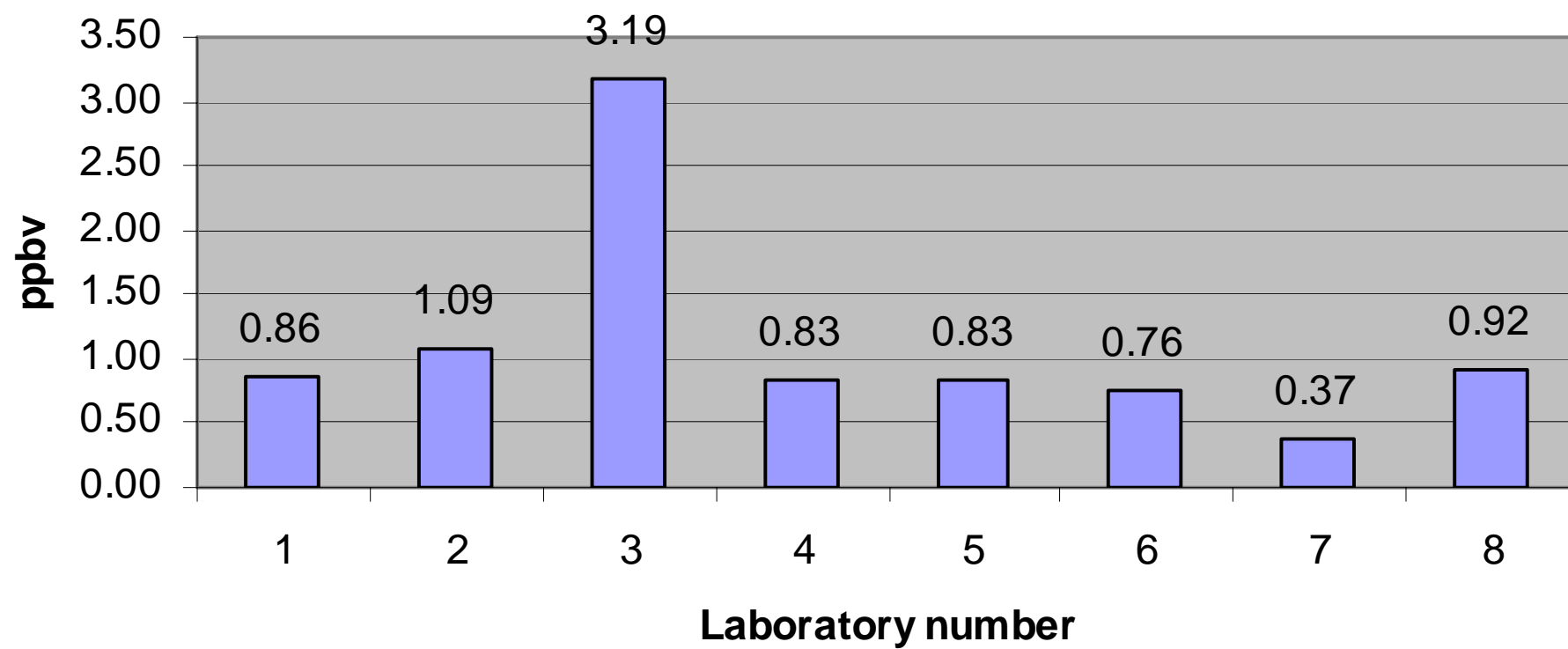
Vinyl Chloride



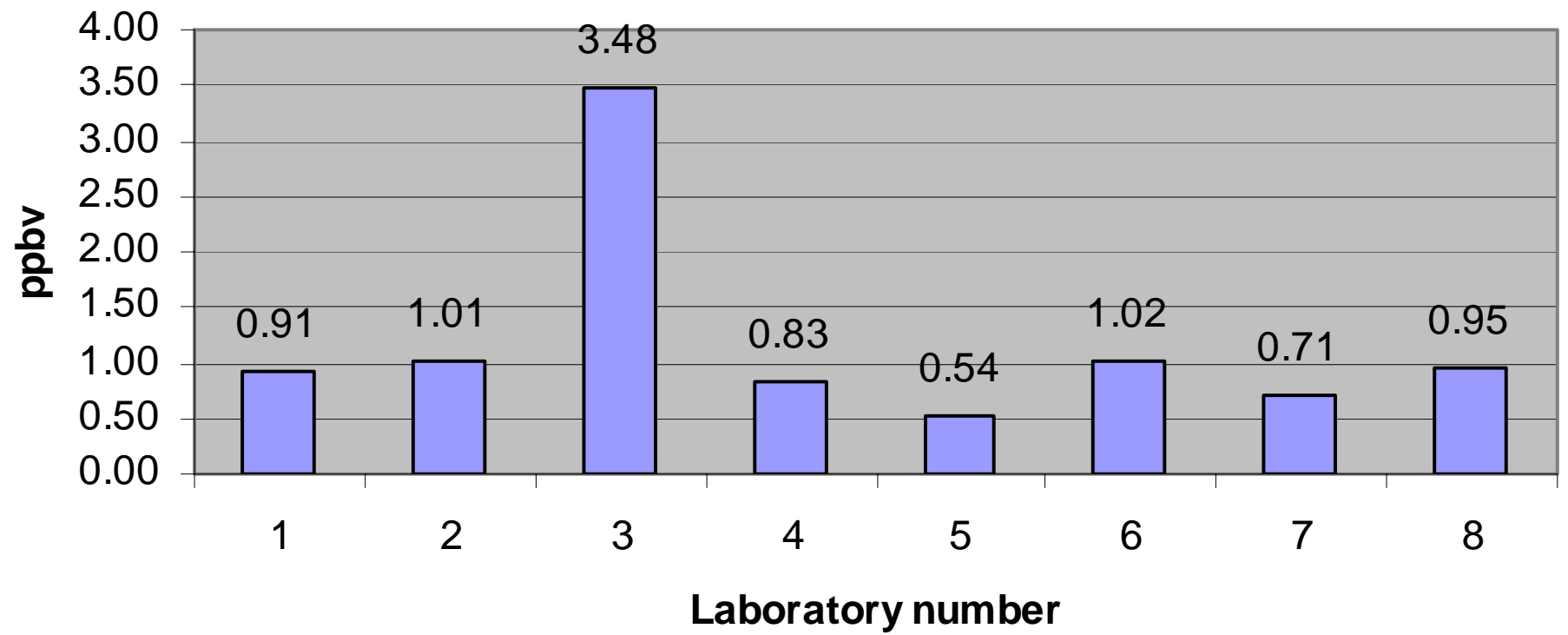
Chloroform



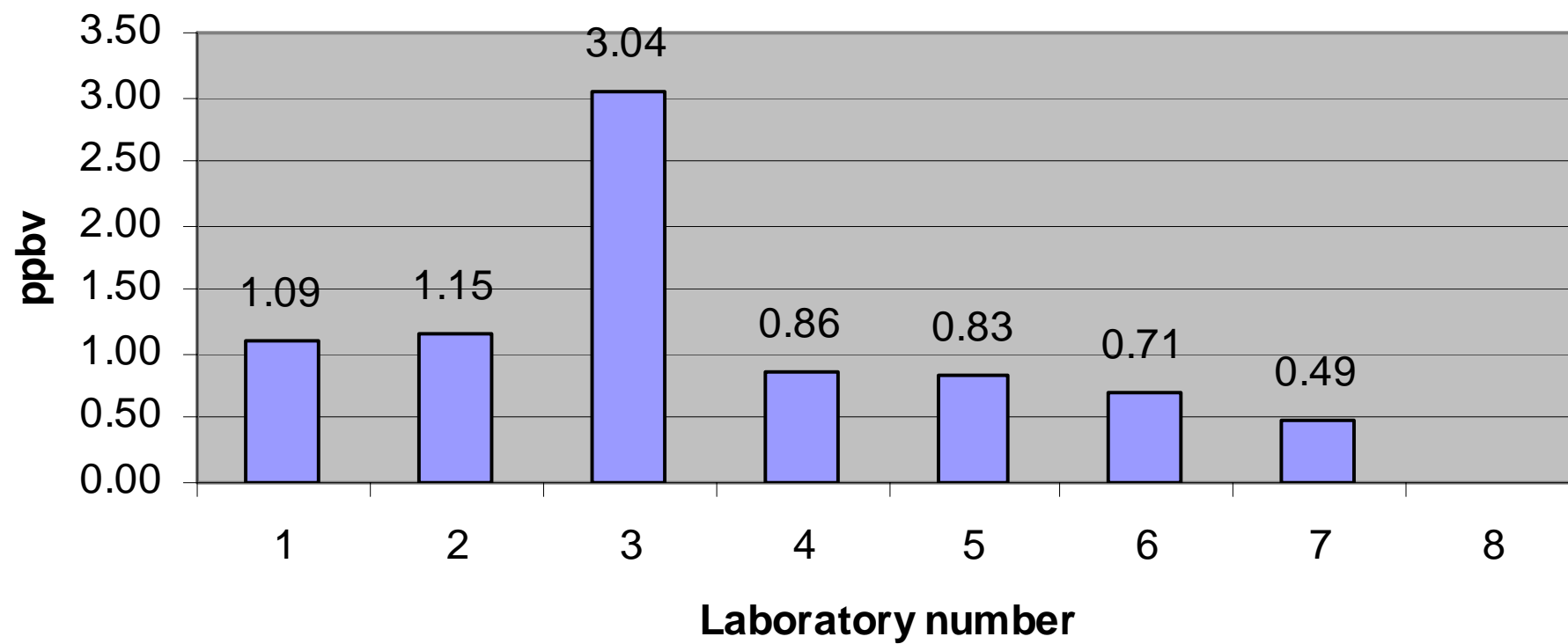
1,1-Dichloroethylene



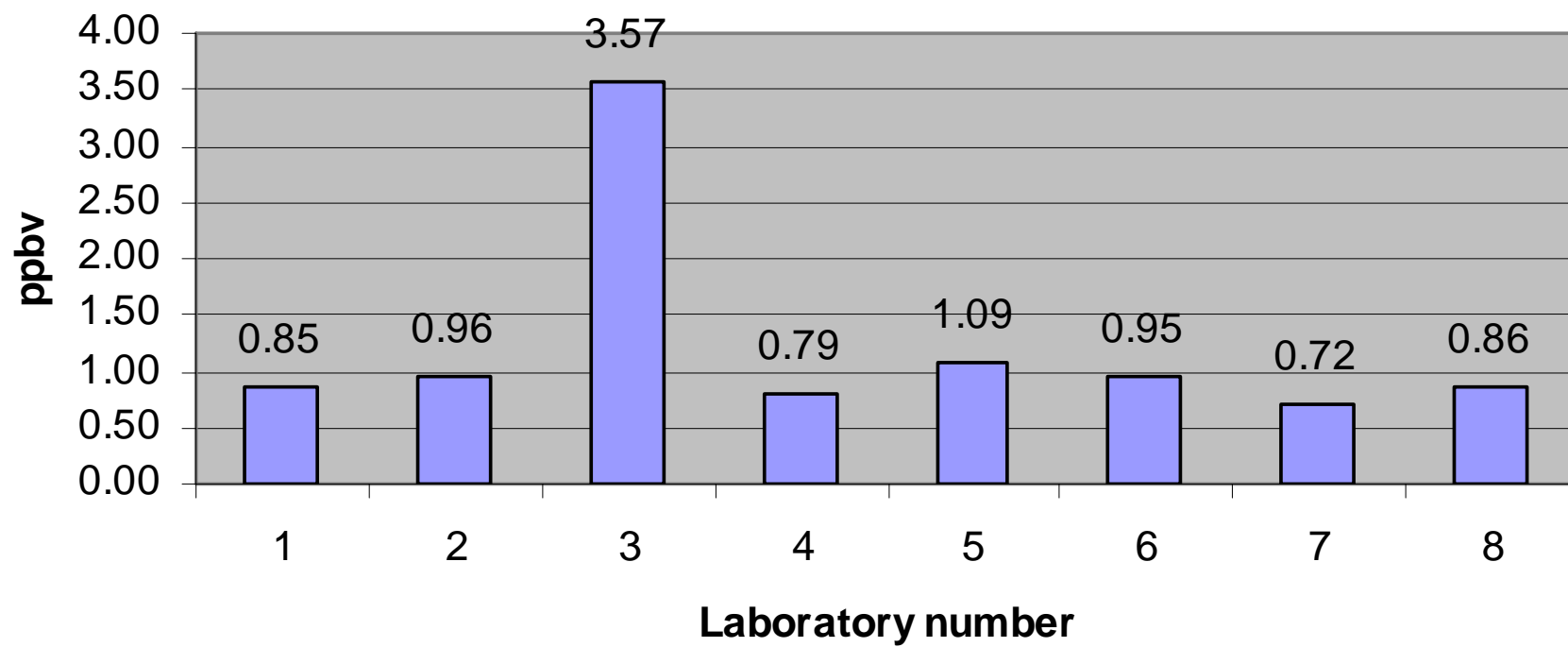
Benzene



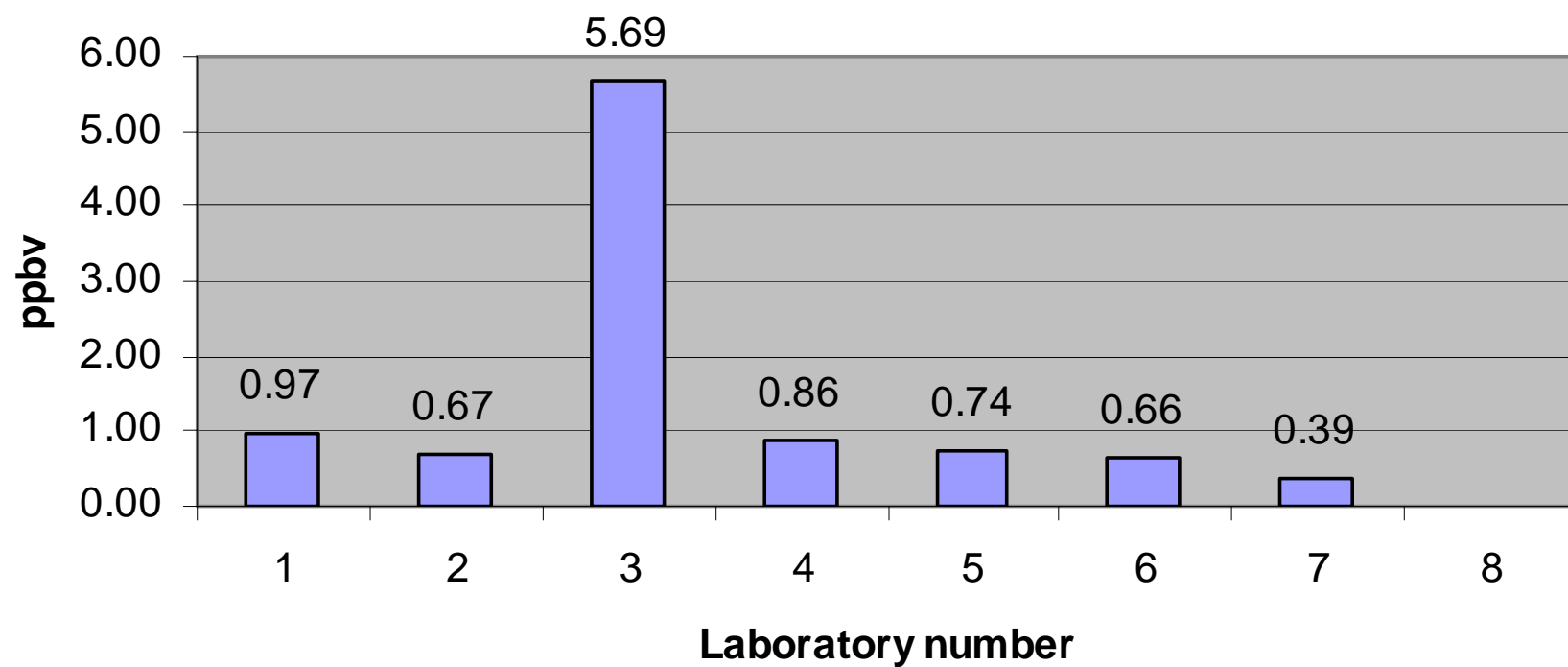
Methylene Chloride



Toluene



1,2,4 Trichlorobenzene



Conclusions

- PT samples and NIST traceable standards are essential for producing high quality, consistent data.
- May need PT samples available several times per year. The National Environmental Laboratory Accreditation Conference (NELAC) recommends twice per year.
- When sending PT samples, must be VERY clear with directions on how to handle calculations and reporting..